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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/006,704	12/10/2001	Shane J. Trapp	M4065.0369/P369-A	3229

24998 7590 07/03/2006

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EXAMINER
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UMEZ ERONINI, LYNETTE T

ART UNIT	PAPER NUMBER
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1765

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/006,704	<b>Applicant(s)</b> TRAPP, SHANE J.	
	<b>Examiner</b> Lynette T. Umez-Eronini	<b>Art Unit</b> 1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 June 2006.  
 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 26 and 77-82 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
 6) ☒ Claim(s) 26 and 77-82 is/are rejected.  
 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
 10) ☒ The drawing(s) filed on 10 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) ☐ All b) ☐ Some \* c) ☐ None of:  
 1. ☐ Certified copies of the priority documents have been received.  
 2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/16/2006</u> . | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***REQUEST FOR CONTINUED EXAMINATION***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114 because the formerly applied reference failed to teach a plasma etching composition comprising: at least two fluorocarbons are selected from the group consisting of fluorohydrocarbons, chlorofluorocarbons, and chlorofluorohydrocarbons. Applicant's submission filed on 6/13/2006 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 26, 77, 78, 81, and 82 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (US 5,976,222).

Yang discloses, " . . . a fluorochemical containing exhaust gas from a semiconductor fabrication facility conducting an etch or clean process step is provided in stream 12 comprising a diluent gas, such as nitrogen, and fluorochemicals comprising potentially  $\text{NF}_3$ ,  $\text{SF}_6$ ,  $\text{CF}_4$ ,  $\text{CHF}_3$ ,  $\text{CH}_3\text{F}$ ,  $\text{C}_2\text{F}_6$ ,  $\text{C}_2\text{HF}_5$ ,  $\text{C}_3\text{F}_8$ ,  $\text{C}_4\text{F}_8$ ,  $\text{HF}$ ,  $\text{F}_2$  and mixtures of these gases. Additional components in this mixture include;  $\text{CO}$ ,  $\text{CO}_2$ ,  $\text{H}_2\text{O}$ ,  $\text{O}_2$ ,  $\text{CH}_4$ ,  $\text{SiF}_4$ ,  $\text{SiH}_4$ ,  $\text{COF}_2$ ,  $\text{N}_2\text{O}$ ,  $\text{NH}_3$ ,  $\text{O}_3$ ,  $\text{Ar}$ ,  $\text{Br}_2$ ,  $\text{BrCl}$ ,  $\text{CCl}_4$ ,  $\text{Cl}_2$ ,  $\text{H}_2$ ,  $\text{HBr}$ ,  $\text{HCl}$ ,  $\text{He}$  and  $\text{SiCl}_4$  (column 7, lines 12). The aforementioned reads on,

A plasma etching composition.

Yet, Yang fails to disclose respectively in claims 26, 77, and 81-82, an example of Applicants' specific combination of two fluorocarbons and ammonia, wherein at least two fluorocarbons are selected from the group consisting of fluorohydrocarbons, chlorofluorocarbon, and chlorofluorohydrocarbons; at least one fluorocarbon, ammonia and oxygen; and at least one of oxygen and nitrogen, in addition to the rest of the limitations of claims 26 and 78.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to select any combination of etchant gases as taught in the Yang reference, including Applicants' claimed etchants that would effectively

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accomplish the disclosed composition since Applicants have not shown evidence of unexpected results.

Furthermore, since a gas is matter that occupies space and has random motion and since Yang discloses a mixture of etchant gases, then it would have been obvious that Yang's combination of fluorochemical gases and additional gases such as  $\text{NH}_3$  and  $\text{O}_2$  would result to form a reactive mixture, **as recited in claims 26, 77 and 78.**

5. Claims 79 and 80 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang (US '222) as applied to claim 78 above, and further in view of Smith (US 6,277,733 B1).

While Yang fails to disclose wherein at least one of said at least two fluorocarbons is  $\text{CH}_2\text{F}_2$ , **in claim 79** and wherein said at least two fluorocarbons are  $\text{CF}_4$ ,  $\text{CHF}_3$ , and  $\text{CH}_2\text{F}_2$ , **in claim 80.**

Smith discloses a wafer is subjected to a plasma containing other fluorocarbons, such as  $\text{C}_2\text{F}_6$ ,  $\text{CHF}_3$ ,  $\text{CH}_2\text{F}_2$  (column 4, lines 34-37).

Hence, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Yang by selecting any combination of fluorocarbon etchants in the Smith reference for the purpose of removing hydrocarbon residue left on metal structure (column 4, lines 41-43).

***Response to Arguments***

6. Applicant's arguments with respect to claims 26-29, 31, and 71 have been considered but are moot in view of the new ground(s) of rejection because the formerly applied reference fail to teach: A plasma etching composition --comprising--:

. . . --wherein said at least two fluorocarbons are selected from the group consisting of fluorohydrocarbons, chlorofluorocarbons, and chlorofluorohydrocarbons--, as recited in **claim 26**;

at least one fluorocarbon, oxygen, and ammonia, wherein said at least one fluorocarbon, said --oxygen--, and said ammonia form a reactive mixture, as recited in (Currently Amended) Claim 77; and

the limitations of (New) Claims 78-82.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynette T. Umez-Eronini whose telephone number is 571-272-1470. The examiner is normally unavailable on the First Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

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For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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June 24, 2006

NADINE NORTON  
SUPERVISORY PATENT EXAMINER  
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